III-V COMPOUND SEMICONDUCTOR FIELD-EFFECT TRANSISTOR AND MANUFACTURE THEREOF

III-V COMPOUND SEMICONDUCTOR FIELD-EFFECT TRANSISTOR AND MANUFACTURE THEREOF

Patent Number: JP1082676
Publication date: 1989-03-28
Inventor(s): SUNAKAWA HARUO
Applicant(s): NEC CORP
Requested Patent: ☐ JP1082676
Application Number: JP19870242003 19870925
Priority Number(s):
IPC Classification: H01L29/80; H01L21/205
EC Classification:
EC Classification:
Equivalents:

Abstract

PURPOSE:To form a FET of high quality having low source resistance of source, drain regions by providing the source, drain regions on the sidewall of plane 111A of a forward mesa structure formed on a semi-insulating substrate of plane 100 and a gate region on the surface of plane 100 of the top of the forward mesa structure.
CONSTITUTION:After the surface 12 of plane 100 to become a gate region of a semi-insulating GaAs substrate 11 is masked with an SiO2 film 13 and the surface 14 of plane 111A to become source, drain regions is formed with etchant, the mask 13 is removed. Then, GaAs is ALE-grown on the substrate. An Se impurity is planely doped at each 10 layers of the GaAs. Eventually, a WSi heat resistant gate electrode 17 is formed on the top 15 of the ALE-grown layer, and contact electrodes 18 to become source, drain are formed on the wall 16 of the ALE-grown layer side by alloying AuGe alloy and an n-type layer. Thus, the contact resistivity of the source, drain regions with the electrodes is extremely reduced, and preferable FET characteristics are obtained.